Abstract of the Disclosure

A radio frequency (RF) motion capture system includes stationary sensor receivers, one or more transmitter marker tags on one or more objects to be tracked within a capture zone, at least one stationary reference tag transmitter, and a processing system for processing the received signals. The individual tags transmit burst of spread-spectrum RF signals. The transmitted signals include a common sync code, and a tag identification code that is unique to each tag. By computing double differences of pseudoranges, clock terms are cancelled out allowing the processing system to precisely determine the location of each tag as it moves through the capture zone without the need to synchronize clocks between sensors and tags. The system can be used for RF match moving.